

DoD Automatic Test Systems Strategy Refresh and Industry's Role



Plenary Session
AUTOTESTCON 2004

The commercial test and diagnostics industry today plays the critical role in DoD's future ATS strategies

Industry Panel

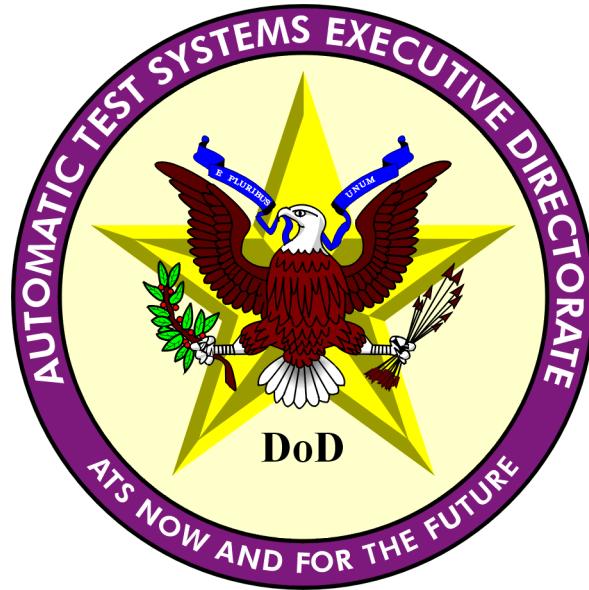
- Agilent
Microwave
- Teradyne
- National Instruments
- Northrop Grumman
ATE/Simulation

Pat Byrne - Senior VP, RF &

Peter Hansen - Chief Scientist

Tim Dehne - Senior VP, R&D

Don Kump - VP,



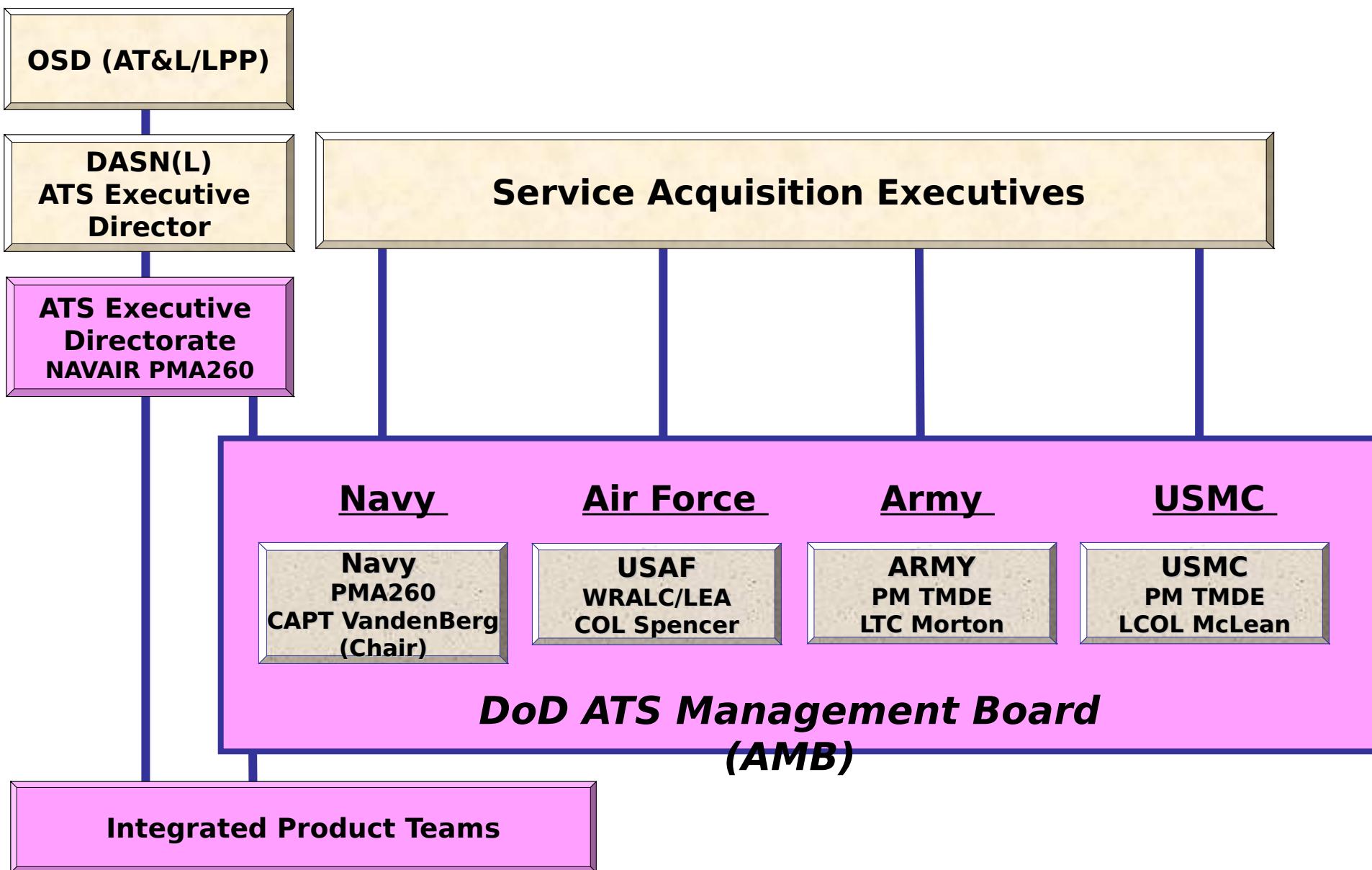
DoD Automatic Test Systems Strategy Refresh

Bill Ross, DoD ATS Executive Directorate
21 September 2004

DoD ATS Management - Recent Events

- DoD Executive Agent for ATS → DoD ATS Executive Director
- OSD (AT&L) letter addressing DoD ATS policy released 7/28/04
- ARGCS demonstration contract awarded 9/16/2004
- Significant progress in defining the ATS Technical Framework interfaces

Joint Coordinating Organization



DoD ATS Goals

- Reduce the total cost of ownership of DoD ATS
- Provide greater flexibility to the warfighter through Joint Services interoperable ATS
- Reduce logistics footprint
- Improve quality of test

DoD 5-Step ATS Strategy for the Future

1. Use DoD designated Standard ATS Families
2. Define a Technical Framework for ATS
3. Share technology development and insertion
4. Share investment in next generation ATS demonstrations
5. Each Service modernize own systems

#1: Use DoD Designated Standard ATS Families

- Key to this strategy - limiting ATE types
- Previous versions of DoD 5000.2-R had policy to use DoD ATS Families or COTS Systems
- Policy letter released by OSD in July 2004
 - DoD ATS Families are now the preferred solution
 - COTS permitted when there is no acceptable Family solution
- This policy will be published in next update of DoD 5000.2-R

#1: Use DoD Designated Standard ATS Families

Navy and Marine Corps Aviation



CASS Family

Army



Integrated Family of Test Equipment

Marine Corps Ground



Third Echelon Test Set

Intermediate, Depot level

Organizational level

Navy and Air Force



Joint Services Electronic Countermeasures System Tester

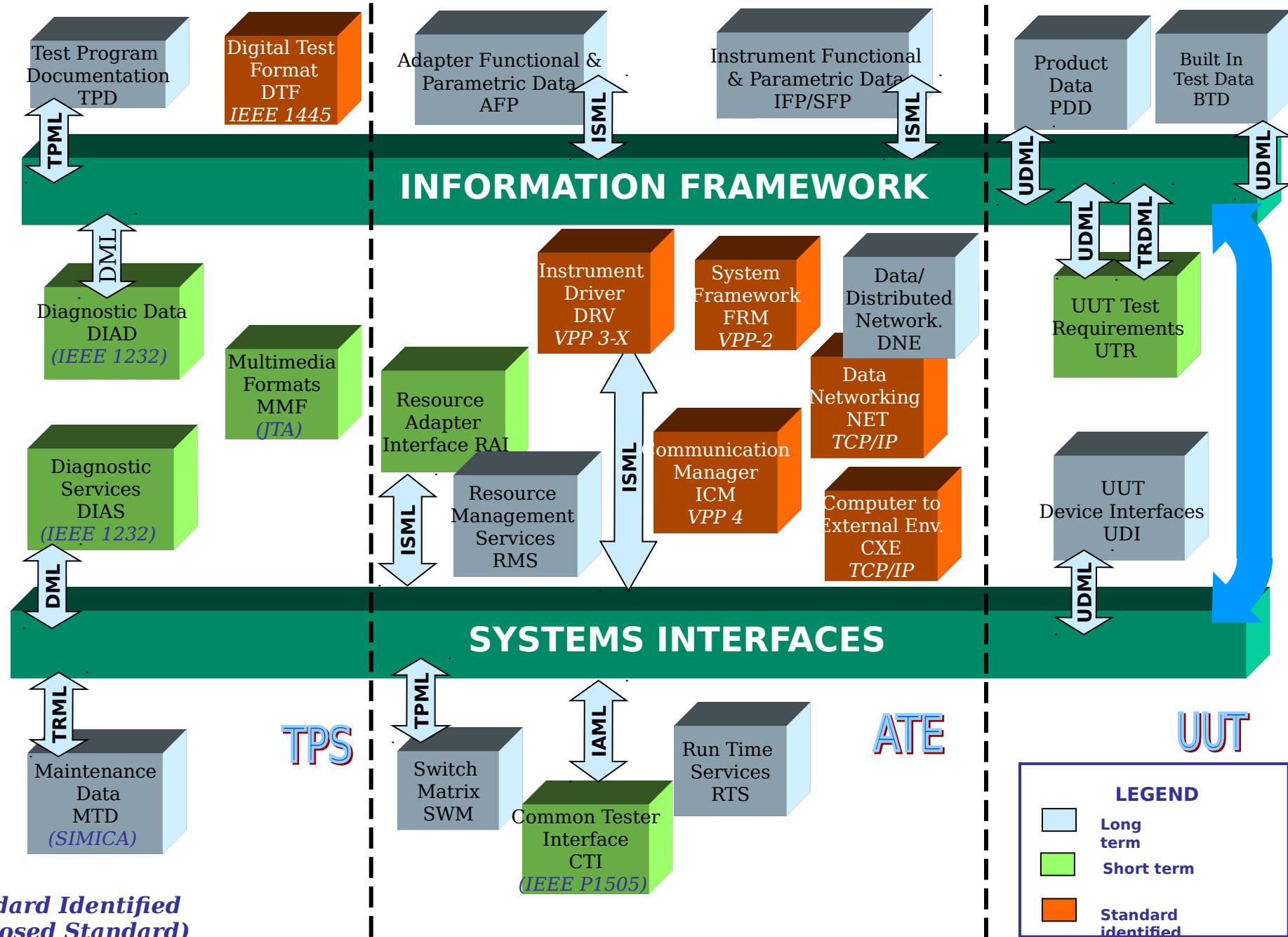
DoD 5-Step ATS Strategy for the Future

1. Use DoD designated Standard ATS Families
2. **Define a Technical Framework for ATS** 
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#2: DoD ATS Technical Framework

- Key to this strategy - A Technical Framework (architecture) to help steer future ATS designs to meet the specified DoD ATS goals
- A DISR/JTA service area - Engineering Support - Automatic Testing
 - 7 “mandated” standards and rules
 - 17 “evolving” interface standards
- Working with industry standards bodies
 - IEEE SCC 20, IVI Foundation, etc
- Establish additional government/industry working groups as needed
 - Common Tester Interface (CTI) working group
 - Automatic Test Mark-up Language (ATML) working group
 - E-O IVI working group
 - Synthetic Instrument IO working group

#2: DoD ATS Technical Framework



#2: DoD ATS Technical Framework

- A Technical Framework roadmap was recently prepared
- Near-term interface definition priorities (6 interfaces)
 - Diagnostics information exchange
 - Tester interface
 - Resource adapter Interface
 - Functional & parametric data interface

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#3: Share Technology Development and Insertion

- Key to this strategy - leverage our limited R&D
- Periodic test technology “industry days” – Last was Dec '03
 - Closed door (non-disclosure) 1-hour sessions with each company
 - Services select technologies for follow-up
 - Joint Service investments and partnerships with industry
- Present ourselves as a Joint Services team to industry
 - Industry is more willing to invest in the products we need
 - We are often asked for guidance on their R&D and IR&D projects

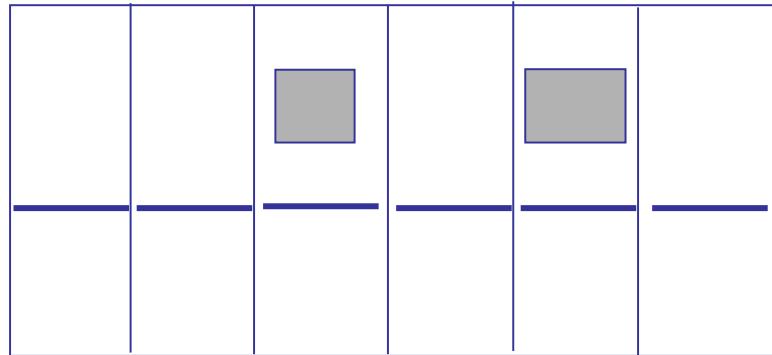
#3: Share Technology Development and Insertion

Current/Planned Joint Technology Developments

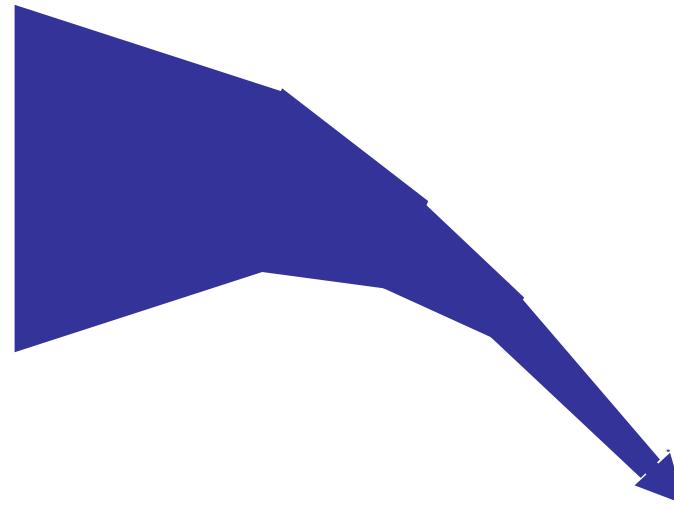
- Multi Analog capability
- Advanced Synthetic Instruments
- Common Tester Interface (CTI)
- ATML/XML and .NET for test and diagnostics
- Downsized and improved Electro-Optics Test capability
- High resolution inertial reference units for acceleration drift testing
- Higher frequency ranges and phase array radars
- Diagnostics data reuse and electronics prognostics
- Evolving digital interface
- “O” level Test Technologies/concepts – Navy AVITS – other

#3: Share Technology Development and Insertion

Challenge to Industry



“I” Level ATE Today



“I” Level Soon

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#4: Share Investment in Next Generation ATS Demonstrations

Next Generation System-Level Demonstration

- Key to this strategy - demonstrate a system-level solution that:
 - Rolls up the set of shared test technologies
 - Embraces the ATS Technical Framework
 - Could become DoD's Next Generation Support Solution
- Current system-level demonstration is named **Agile Rapid Global Combat Support (ARGCS)**
- ARGCS is a joint service demonstration
 - OSD ACTD funds (FY04 - 08)
 - Army, Navy, Air Force and USMC providing funding and other resources
 - UK and Spain MODs participating
 - System Integrator contract awarded in Sept '04 to Northrop Grumman
 - Honeywell, ARC, Aeroflex

#4: Share Investment in Next Generation ATS Demonstrations

ARGCS Key Features & Metrics

- ATS interoperability among Weapon Systems, Services, and other countries
- Scalable to need
- Smaller footprint, reduced logistics burden
- Better use of weapon system diagnostics data and historical maintenance data
- Performance enhancements

#4: Share Investment in Next Generation ATS Demonstrations

ARGCS ACTD - Operational Demonstrations

ATE Environments

Navy/USMC Air - CASS

USAF - ESTS

Army - IFTE
Subsystems

USMC - TETS

Weapon Systems

F/A-18 Radar, E-2C Radio/IFF

F-15 Radar

Paladin, M-1 & Apache

LAV-25, MRC142

#4: Share Investment in Next Generation ATS Demonstrations

ARGCS ACTD - Deliverables

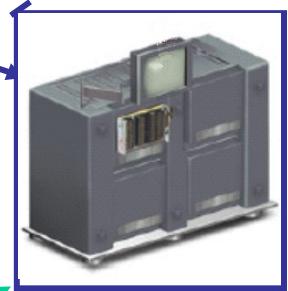
- **ARGCS Navy Prototype**
 - ESTS ThinMint Adapter
 - CASS ThinMint Adapter
 - IFTE ThinMint Adapter
 - TETS ThinMint Adapter
 - Servers and Software to implement Integrated Diagnostics
 - O-Level tester
- **ARGCS Marine Corps Prototype**
 - TETS ThinMint Adapter
 - Servers and Software to implement Integrated Diagnostics
- **Optional Air Force ARGCS Prototype**
- **Optional UK ARGCS Prototype**
- **Optional Spain ARGCS Prototype**
- **Optional Technology Kit to update IFTE with ARGCS Technology**

Agile Rapid Global Combat Support System (ARGCS)

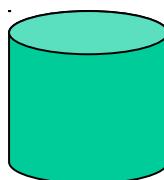
FY04 Advanced Concept Technology Demonstration



BIT data



Smarter Diagnostics



Maintenance Data

Scalable



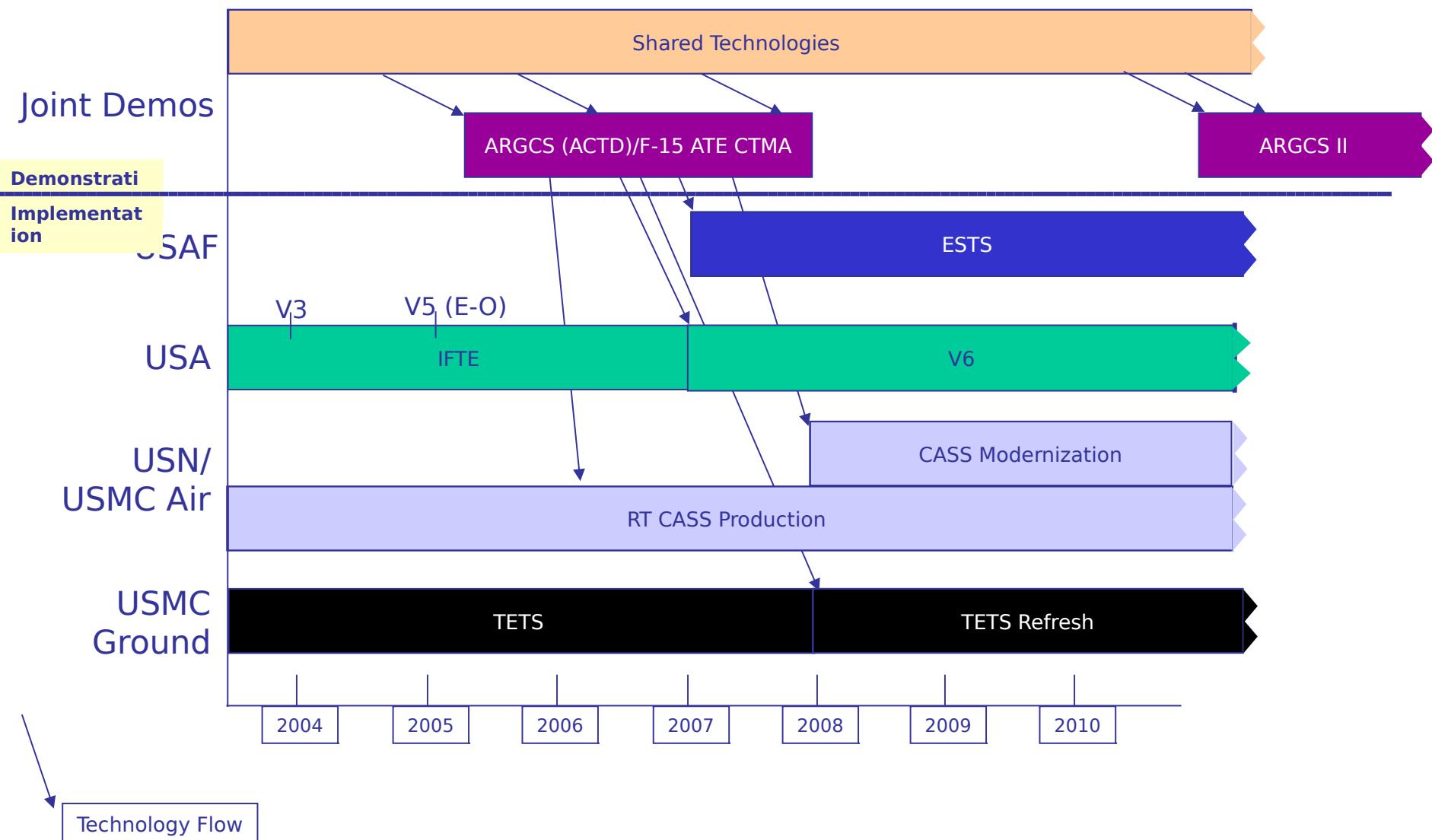
Army, Navy,
USMC, USAF
TPSs

Interoperable

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#5: Each Service Modernize own Systems



- RTOC

- Interoperability

- **Reduced Logistics Footprint**

- **Improved Quality of Test**

1. Evolving DoD ATS Families

5. Service Implementations

2. ATS Technical Framework

4. Sharing System Level Demonstrations

3.

Sharing Technology Development

